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ABSTRACT

The paper presents an innovative approach to the future by examining the concept of time in the 20th century, the development of a sense of chronology, and the role of futures history through the process of "invention." The model is based on the Einsteinian theory of the relativity of time. The author suggests that learning a sense of chronology encompasses three stages: one, development of a linear sense of chronology; two, development of a multilinear sense of chronology; and three, development of an integrative/holistic sense of chronology. Learning a sense of chronology in this manner lays the groundwork for a new approach to teaching and doing futures research. The approach, "Futures Invention," has the intention of placing power in the hands of individuals who invent alternative futures through a series of structured techniques. In the first stage of the project, activities aid participants to develop new thought patterns. In the second stage, when participants have left behind the baggage of the past and present, they develop a group of individualized intentions for the future. The third step is to write a futures history backwards--from the future place where the intentional scenario exists--which includes strategies and plans. The aim is to help people gain a sense of power and control over their destinies. (Author/KC)

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WRITING FUTURES HISTORIES

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How do futurists and historians view "time"? Is there a qualitative difference in these perceptions? Or are there analogies and typologies which allow futurists to write "future histories" in much the same fashion (and with many of the same varieties) as historians write "past histories"?

The aims of this paper are to deal with four areas:

1) the concept of time in the twentieth century
2) developing a "sense of chronology"
3) "inventions" of the future, and
4) the role of futures histories in these inventions.

* * * * * *

Man's perception of time - his knowledge of cyclic change - and his belief in permanence - is one of his most powerful tools. Just as the capture of time's flow within the clock and the calendar is fundamental to civilization, so the individual's grasp of past, present and future is basic to his personal identity.

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Time is the healer, the builder, the thief, the destroyer. Magic promises us a way around it through such phenomena as precognition and the suspended states brought on by altered consciousness, while science promises us a way to benefit from it through such timesaving mechanisms as efficient industrial production and the organization of vast populations along temporal axes. But we constantly wobble between our feelings about time and our ideas about what it should be. We alternate between a sense of the linear and directional and a sense of the simultaneous, the patterned whole.

-Gwyneth Cravens "Improving the Nick of Time" Harpers Magazine (Jan., 1974),3.

THE CONCEPT OF TIME

There is a line in James Weldon Johnson's poem about creation called "God's Trombones" that says "and time shall be no more". To most people this is an unthinkable thought. A world without time is a world without creation, evolution, motion, direction or purpose. In a word, it is a world of non-conscious death. Philosophers of whatever stripe begin with an assumption that there is a thing called "time" - it may be a perception - it may be a value - or it may be simply a use of verb tense[1] in a particular way; but, it exists.

What is time? Is it unidirectional? If so can it run backwards? Is it multi-dimentional and based simply on people's animal senses of perception? Or is it merely a linguistic "statement" about measured motion?

R. Buckminster Fuller describes time as follows: [2]

> Time is experience. Time can be expressed only in relative magnitude ratios of relevant experiences. Time can be defined only in terms of the relative frequency of reoccurrence of relative angular changes of the observer's environment, the relative frequency-of-occurrence rate being referenced to any constantly recycling behavior of any chosen subsystem of Universe, e.g., a clock.
>
> Newton said that time was a very specific phenomenon, assuming that there was a specific and finite time that permeated Universe and that everything observable in Universe was occurring at the same time. It was Einstein who discerned that time might be relative to the individual observer. A majority of academic people and the vast majority of non-scientists are still using the classical Newtonian scientific conceptioning of "instant Universe".

Fuller has touched upon the basic confusion about time with which futurists (and historians) must grapple: the basic Newtonian paradigm (harking back to Aristotelian philosophy) which holds that time is a constant - a given - in a world where absolute universal laws prevail.

Translated into the popular metaphor "Time is like a river running", many people see time as a unidirectional sequence of "nows" moving from past to future.

The alternative 20th century paradigm of relativity spawned by Einstein's use of time as a perception relative to the observer has not yet "caught on" in the minds of many historians (and futurists). They still see the past in term of post-diction - just as futurists see the future in terms of pre-diction.[3]

I would propose a new metaphor to replace the Newtonian paradigm's view of time the river flowing:

This metaphor is that "time is a place."

Time and space are coterminus.

Geography is chronology.

To use Fuller's terminology, time is conceptual and metaphysical. In theological (and mathematical) terms, eternity and infinity are coterminus. The theologian Paul Tillich in dealing with ontology assumed that there was a state of "being" and that is had attendent threats of "non-being". This has nothing whatsoever to do with clocks, calendars, or time measurements. It is a state of consciousness.

Linguistically this translates into all sorts of phrases dealing with time which reflect in the popular consciousness (and anthropology) a plethora of uses for the word time: e.g.

"doing time" (in prison)
"good times"
"being on time"
"time out"
"Three times three equals"
"Time piece"
and so forth

There are subtle variations in each of these uses of the word time. Is it any wonder that historians and futurists employ the concept of time in a myriad of subtle and different ways?

As the Eastern and Western classical worlds struggled with "shaping" the idea of time over four thousand years ago, these "varieties of time" were explored. In Greek mythology the father of the gods was Kronos. And he was soon linked in the popular mind to "the fates". In certain forms of yoga meditation the goal is to "escape from time" and "place" (i.e. out of body). And in St Augustine's famous puzzle he states (Confessions) that when he is asked "What is Time?" he responds that when noone asks the question he knows the answer, but when someone asks it he does not know the answer. All these reflect the enigma of time.

As a first step, the idea of time is rather simple: it is days and seasons[4]

> For everything there is a season, and a time for every matter under heaven:
>
> a time to be born, and a time to die;
> a time to plant and a time to pluck up what is planted;
> ....
>
> -Ecclesiastes 3:1 ff

Time is the sun rising each day (with or without the help of Orpheus); it is the day divided into sections by an hour glass or a burning candle or an atomic clock; it is time zones and "jet lag" and estimated times of arrival.

And thus is time taught by many historians (and futurists). "Chronicles" list events in "sequential" order - all neatly packaged by "years". Philosophers talk about an infinite succession of invisible points (instants) and go on about their business of filling up these points in succession.

Walk into a traditional college or high school classroom and you are apt to see the teacher "developing an idea" (during a 50 minute hour) about history as a sequential succession of events (sometimes causally linked) which we, through hindsight, can read. There may even be a "time line" on the blackboard (or in the textbook) and as students take their notes they imprint on their consciousness this popular conception of the paradigm of time as a succession of events from past to present to future.

I would warrant that many "future-ists" were raised on this very perception and have suckled it like mother's milk. These futurists see future time as an <u>extension</u> of past time gotten to by the vehicle of the present fleeting moment.

But all of us also experience timelessness: in making love, in sleep, in day dreaming and so forth. It is this latter perception of time that could be the springboard to a new way for futurists to "teach" about the future.

Let me say it another way: Futures research done (and taught) by futurists who are themselves grounded in the classical Newtonian paradigm of absolute time will produce monographs (and course syllabi) based on techniques such as extrapolation, probability, and prediction.

But there is a wholly different approach to time based on the Einsteinian paradigm of relativity which allows historians and futurists to teach and do research about the past and the future in a wholly different way. The next two sections of this paper deal with this "relativist" approach.

TEACHING A SENSE OF CHRONOLOGY

For educators and historians, one of the most remarkable contributions to the literature and teaching of history may be found in Martin Duberman's study of Black Mountain, the North Carolina college which was a seed plot for all sorts of creative minds during the nineteen thirties, forties and fifties.

Duberman's contribution comes in the form of a simple technique: he picks himself up from the present and as he records from Black Mountain archives the minutes of a meeting discussing an educational issue, he plops himself down right there in the middle of that meeting as though he too was a participant. Thus he joins in a conversation which took place thirty years ago. He sits with the group and re-writes history to include what he is saying during the dialogue amongst the leaders of Black Mountain.

Duberman thus injects honesty into history. His biases, perceptions, limited sense of vision as an historian and so forth are all laid bare by the fact that as he writes his history of Black Mountain while sitting at his desk during the 1960's, he simultaneously transports himself back into the 1930's and sees Black Mountain as a "place" with real people all around him talking about real educational issues. And he joins in their talk.

Futurists can do the same thing with future time. Futurists can pick themselves up out of the present and transport their "intentions" about the future into that "place" which is, for example, 1999.

H.G. Wells in The Time Machine thought of this as a mechanical and physical process. But since Einstein we can think of this as an attitudinal, conceptual and metaphysical process.

The implications for teaching either the past or the future in this way are significant.

A prerequisite, however, is to deal with how people learn a sense of chronology. How do people learn to "tell time" in the context of developing a sense of history?

It has become popular in the education world to talk about "learning development" within a "learning environment". I would like to link these two concepts still more closely.

Beginning with Freud and Erikson, and going on to Piaget, Kohlberg and Loevinger,[5] it is now in vogue to talk about "developmental patterns" for learning. It is posited that

just as one learns to crawl before walking, one also learns, for example, that a Stage I sense of morality (according to Kohlberg) develops most fully before a State VI sense of ethics can develop as fully as possible.

This is not to say that developmental stages are a "stepladder". Rather it is that, for example, in Loevinger's developmental schema the"symbiotic" pattern of personality development in early childhood precedes the more "autonomous and integrative" personality traits of mature adulthood. Freud and Erikson both recognized this "stage development" patterning as well as the fact that some people become "fixated" at certain stages of development (for example, the anal vs the oral stage for Freud; or, the trust vs mistrust stage for Erikson, etc.) All developmental stages may be rich or lean; fully developed or underdeveloped, in any individual at any time.

I propose that a "sense of chronology" develops in individuals in much the same way that personality traits, learning patterns and social patterns develop. And, that this sense of chronology develops in the context of a larger development which for lack of a better term I will call a "sense of history".

The chart on the following page explicates this staged development approach relative to other developmental approaches.

* * * *

There are a number of implications to be drawn from this chart (for example, that the roots of the history of history have analogies to each individual's sense of history; and that the educational importance of teaching in a synchronous way at the level of each individual student's own sophistication at each stage is manifest - this being done by diagnostic, developmental, individualized instruction) but these implications are developed elsewhere.[6]

Rather, for the purposes of this paper, I would like to focus upon Stage III : developing a Sense of Chronology.

Young children learn to "tell time" first through their physical cycles of sleep, hunger and emotional need (the basis for biorhythm inquiry) at a primal level. Soon we "teach" children that holidays and birthdays and future events to be anticipated are "important". We also teach children that in the past things were "once upon a time". Thus we construct on a physical foundation a paradigm of time which transmits from generation to generation a Phase I Sense of Chronology (within Stage III) of a Sense of History. This Phase I sense

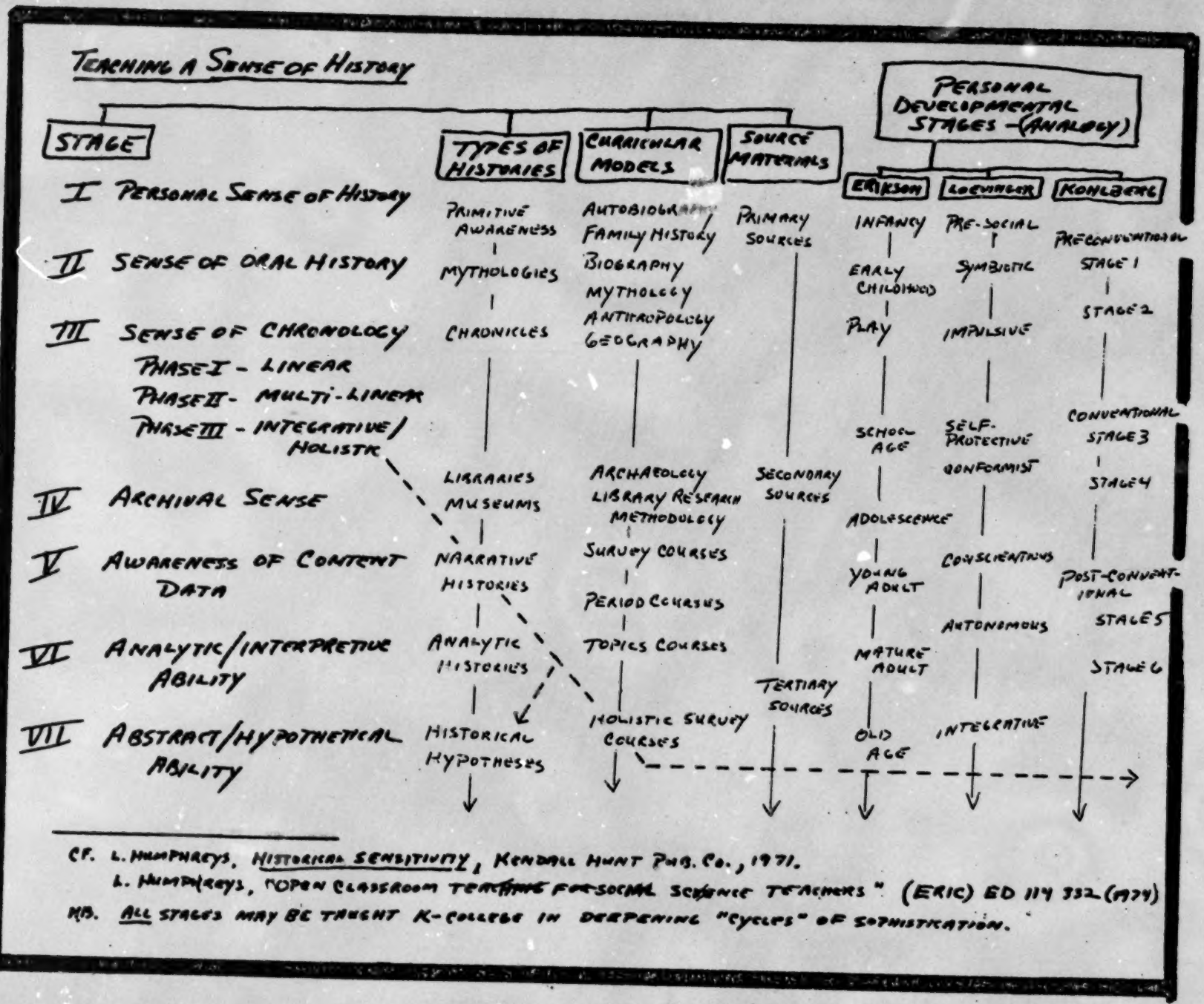


Figure 1

Cf. L. Humphreys, Historical Sensitivity, Kendall Hunt Pub. Co., 1971.

L. Humphreys, "Open Classroom Teaching for Social Science Teachers" (ERIC) ED 114 332 (1974)

NB. All stages may be taught K-college in deepening "cycles" of sophistication.

of chronology is unidirectional (from past to present to future) and treats time in an absolute sense according to the Aristotle/Newton paradigm of the universe. Thus I refer to it as having a "linear sense of chronology".

Some people, however, are "taught" to get beyond this simplistic linear concept of time and enter Phase II of Stage III: a multi-linear sense of chronology. In some history classes the teacher can present material in such a way that a holism about time begins to emerge.

This Phase II development is exemplified in the ability of the teacher to show students, for example, that there were developments in China in the 5th and 4th centuries BC which were similar to those in classical Greece at about the same time. These teachers use what are called "whole learning charts"[7] and teach their students the history of the whole world simultaneously.

The key to this sense of holism is the teacher's own awareness of the difference between Phase I linear chronology and Phase II multi-linear sense of chronology. Whereas teachers of Phase I will construct "time lines" for a cultural flow of events as, for example:

500	0	1000	1500	1800	
classical Greece	Rome	Middle Ages	Ren and Ref	Enlightenment	etc

the teacher of a Phase II multi-linear sense of chronology will teach time in a more universal, holistic and "whole earth" way (cf. the whole learning chart on the next page).

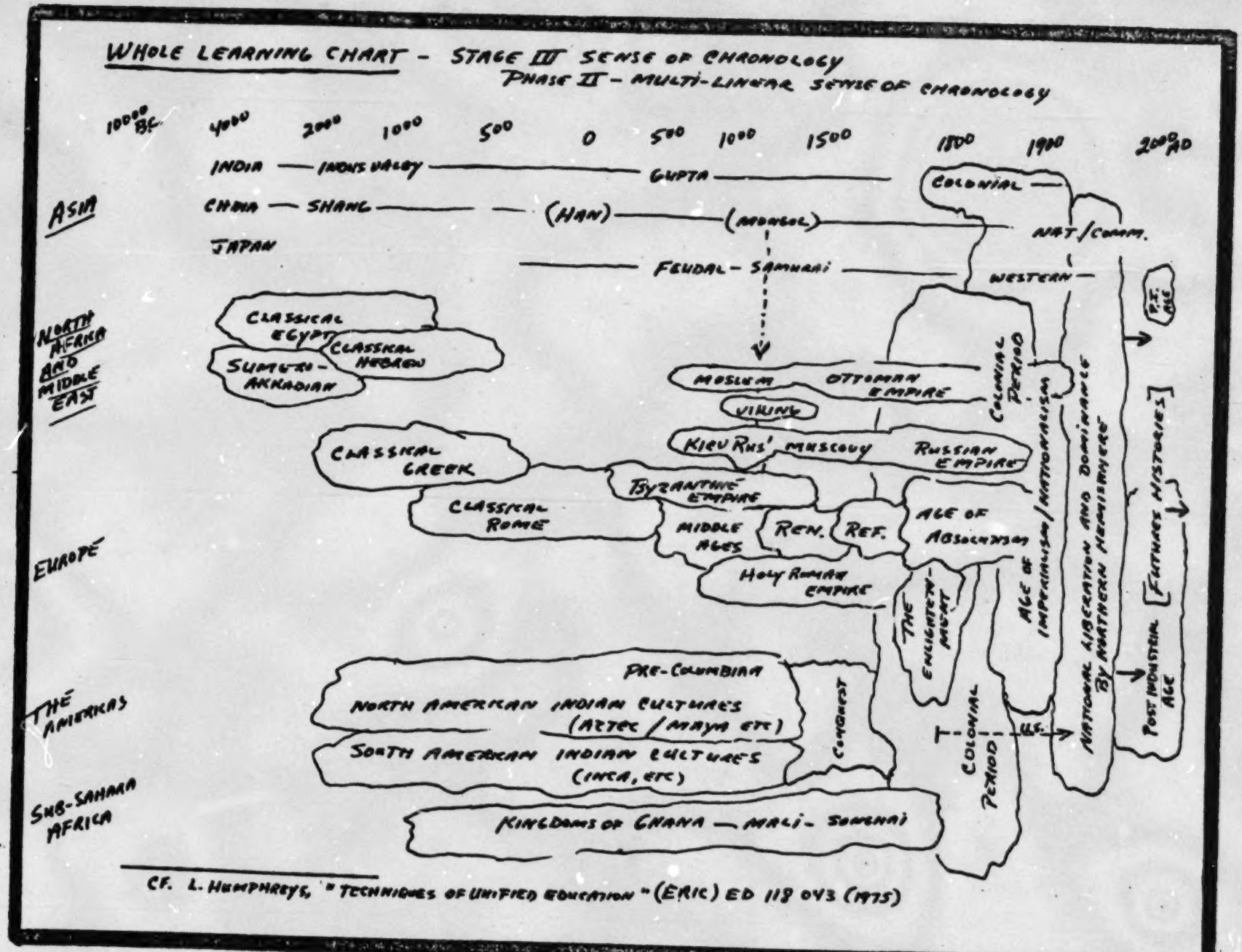
* * * * *

Teaching a sense of chronology in this way prepares students for the development of a Phase III "integrative" sense of chronology (as part of Stage III). (Refer back to the chart on page seven).

This Phase III Integrative Sense of Chronology evolves coterminously with Stage VII of a Sense of History (Abstract/Hypothetical thinking) which is typologically analagous to Erikson's "Mature Adult Stage" and Loevinger's "Integrative" stage. It is developed by teaching techniques such as Synectics[8] and patterning of thought processes such as holism and synergy (a la John Dewey, William James and R.Buckminster Fuller).

In sum, a sense of chronology is learned developmentally as Stage III in the larger context of developing a sense of history in three Phases:

Phase I - linear sense of chronology
Phase II - multi-linear sense of chronology
Phase III - integrative/holist sense of chronology



CF. L. HUMPHREYS, "TECHNIQUES OF UNIFIED EDUCATION" (ERIC) ED 118 043 (1975)

Figure 2

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9.

Learning a sense of chronology in this manner lays the groundwork for a wholly new approach to teaching and doing futures research.

And the key to this approach is interdisciplinarity.[9]

It is not within the scope of this paper to develop the concept of interdisciplinarity, but it is apparent that this particular mode of thinking combines the elements of learning development theories listed above with the critical element of learning environment. It is also apparent the the choice of learning environment significantly affects the type of learning development which takes place. Traditional liberal learning environments, tend to teach history in a linear way. Open classroom and progressive education learning environments can make it possible (because of their emphasis on individualized instruction) to teach a sense of chronology in a multi-linear and more holistic way. This is not to say that more traditional learning environments <u>can't</u> teach a sense of chronology in these latter ways. It is only to say that they have not tended to do so.[10]

In terms of the sociology of education, the narrow construct of a learning environment (e,g, a classroom or a school) <u>can</u> be expanded into the contexts of community, country and global learning environments. This latter construct is the "action field" for educational futurists.

The development of <u>micro-curricula</u> for a classroom (e.g. a"course" or"department" in futures studies) needs to be put into the context of <u>mini-curricula</u> (for schools and colleges) and <u>macro-curricula</u> (such as Sesame Street and other mass communication curricula) which affect millions of people.

In this larger context, educational futurists can develop an approach to the future based on a Phase III integrative/holistic sense of chronology which differs substantially from futures research based on a Phase I linear sense of chronology. This new approach to educational futures (called by Warren Ziegler and others "Futures Invention") is based on the ralativist concept of time described in the first part of this paper and incorporates the developmental learning theories articulated above.

INVENTING THE FUTURE

Futurists who tend to think of time as a unidirectional absolute within the Newtonian paradigm will tend to produce futures education and futures research which reflects this basic bias. In research, for example, the development of complex linear socio-econometric models such as those of the Club of Rome, the United Nations analysts and the American Association of State Colleges and Universities resourse center for planned change program all have in common the assumption that time follows the Phase I or II (linear or mult-linear) development of a sense of chronology outlined above. Thus we go "into the future" carrying the "baggage" which we have accumulated from out past(s). These models use extrapolation modified by regression analysis and other sophisticated substructures of model variables to "project" a development (or series of alternative developments) from the past through the present and into the future. Their trend statements thus have the potential of becoming self-fulfilling prophesies - or their reverse.[11]

For example, with the widespread dissemination of information about population trends during the 1950's and 1960's the fear of an overpopulated world contributed in part to the "baby bust" counterpart to the "baby boom" in the United States. The role of the futurist in this development was as macro-curricular "teacher". Predictions of future disasters were heeded (unlike jeremiads of the past) and the future was in essence predetermined by the extrapolations (in this instance through negative backlash within the United States at least).

This raises the question of the ethical responsibility of futurist "teachers" who deal in macro-curricular areas. The various schools of futurism (optimist, pessimist, cliff climber, etc) all reflect various levels of consciousness of this ethical responsibility in their literature and "curricula".

Along with the increasing consciousness of current day "prophets" about the ethics of futurism has grown a parallel and alternative awareness which stretches back to before the time of the oracles and bone throwers. This awareness encompassed the need for popular participation in the shaping of the future - for a broad based democratic rather than autocratic - type of curricula for educational futurism.

In the 1960's and 1970's through the work of persons such as Warren Ziegler and Frank Wuest, this democratic and populist approach to futures has evolved under the phrase "Futures Invention". This approach is qualitatively different from the unidirectional time approach of most futures educators.

R. Buckminster Fuller has discussed the grounding of this approach as follows:

> Discoveries are uniquely regenerative to the explorer and are most powerful on those rare occasions when a generalized principle is discovered. When mind discovers a generalized principle permeating whole fields of special-case experiences, the discovered relationship is awesomely and elatingly beautiful to the discoverer personally, not only because to the best of his knowledge it has been hertofore unknown, but also because of the intuitively sensed potential of its effect upon knowledge and the consequently improved advantages accruing to humanity's survival and growth struggle in Universe. The stimulation is not that of the discoverer of a diamond, which is a physical entity that may be monopolized or exploited only to the owner's advantage. It is the realization that the newly discovered principle will provide spontaneous, commonsense logic engendering universal cooperation where, in many areas, only confusion and controversy had hitherto prevailed.
>
> In the competitive world of moneymaking, discoveries are looked upon as exploitable and monopolizable claims to be operated as private properties of big business. As a consequence, the world has come to think of both discoveries and patents as monopolized property. This popular viewpoint developed during the last century, when both corporations and government, supported by courts, have required individuals working for them to assign to them the patent rights on any discoveries or inventions made while in their employ.
>
> So now the major portions of extant inventions belong to corporations and governments. Invention and discovery, however, are inherently individual functions of the minds of individual humans. Corporations are legal fabrications; they cannot invent and discover.
>
> -R. Buckminster Fuller, 'Synergetics' Harpers Magazine (March, 1975) 72,73.

Warren Ziegler describes the "inventive" approach to the future as being based upon the "intentions" of individuals. This intentional aspect of futures macro-curricular development places power (which he refers to as "anticipatory") in the hands of individuals who invent alternative futures through a series of structured techniques developed by means of micro-curricular workshops:

> The methodology of this third approach is called action inquiry. The practice is futures-invention. The stance towards the future is neither preventive nor adaptive. It is imperative. The claim is that we should attempt to bring into existence not-yet-occurred states of affairs, new human practices which enable us to organize our social conduct (in all of its forms) in new ways. One place to start is with education; and the futures-invention activities are in themselves educative. They are a form of teaching and learning the future in which persons (as participants in the practice of futures-invention) aim to enable each other to discover their intentions towards the future, the action by which these intentions may be actualized in the present, the consequences of these actions, the limits to these actions: in short their human possibilities.
>
> -Warren L. Ziegler, "Education and the Future" McGill Journal of Education (Spring, 1977), 35.

This action-inquiry model has been elaborated by Frank J. Wuest in his seminal paper on "public learning"[12] and has evolved characteristics of being humanistic, holistic, self-empowering, synergetic and regenerative (in Fuller's sense of the word). And it is based on the relativist Einsteinian paradigm of time as well as the extant theories of learning development (a la Piaget, Erikson, et al.). It fits best with the "integrative" and "mature adult" stages of Loevinger, and with the Phase III integrative/holistic sense of chronology described above in this paper.

FUTURES HISTORIES AND FUTURES INVENTION

Simply put, a curriculum in future studies (be it micro-, mini-, or macro-) based on the futures invention approach lays the pedagogical foundation for a new way to teach and do research about the future.

Summarizing the approach: first it is necessary to set the context. This is done through a workshop format for classroom or small groups. The context in this case is both personal and global. And various techniques (including those developed by people such as Dennis Livingston) may be used to create the necessary mind-set for this context.[13] These techniques when applied to community education programs such as that of Bill Ewald in Santa Barbara become powerful tools for getting people to think in new thought patterns.[14]

Once the group has developed sub-sets of personal and global mind sets which are "real" the workshop format moves on to develop a group of individulized intentions for the future. For the time being, the past and present are ignored and each individual articulates hopes, expectations, dreams, anticipations and intentions.

During this second stage of the development of a futures invention curriculum the "baggage" of the present and past is "shucked off". Anything is "possible" in the future. No problem is insoluable. What people "want to have happen" can happen. At this point individuals leap into the future conceptually. The future is a place. They look about themselves and see what they can see. Are their families nearby? Are there institutions? What do these institutions look like? Scenarios are then written which incorporate these visions of the future which are based on each individual's intentions.

The third step in the curriculum is then to write a futures history - backwards - from the future place where the intentional scenario exists. These futures histories are written (or can be written) with the same kind of rigorousness that typifies the writing of past histories. They demonstrate the same varieties of foibles and biases described by historians as pit falls in the writing of histories which search for the truth.

Throughout the evolution of these first three steps in developing a futures invention curriculum, what is usually discovered is that people need to "invent" whole new social (i.e. group) means to bring about their individual intended futures.

Various workshop techniques are used to articulate this commonality of group intentions. And a climate is set

for people to become both individually and collectively inventive. During this third phase of the curriculum, various metaphorical and synectic techniques are employed by the "teacher/workshop leader" (for example, the metaphor of "time is a place" used above).

Social inventions (like some other types of inventions) take time. The curriculum must leave room for flashes of insight and much, much trial and error space. Few inventions just pop into people's minds. More often, the process involves strong group interaction where alternative "crazy ideas" and fantasies are tossed about. The glue that holds this creative process together is the need to complete individual and group futures histories from the future scenario point backwards to the present. Since the scenarios are written in the present tense (e.g. "Here in 1987 I see myself and the environment around me as....") the futures histories are written in the past tense (e.g. "Back in 1983 we devised a new technique for dealing with...."). It is the job of the teacher/facilitator to assist the group in developing a rigorous history - one that has plausibility. And for this, the teacher must first be grounded in a strong Sense of History - and specifically a Phase III Sense of Chronology.

As the group works its way back to the present from its blending of individually and collectively agreed upon intentions, it becomes apparent that the new social inventions devised will not just "happen". Thus the curriculum enters the fourth stage of development: <u>strategies and action planning</u>.

To be practical, inventing the future of either an individual or a group or an institution there must evolve a set of realizable strategies for actions today which make sense in tomorrow's context. Techniques to develop these strategies are incorporated into the curriculum as action plans based on a public learning model of action research.[15] The "product" at the end of the curriculum may be a "five or ten year" set of plans (with alternatives) based upon a quantity of "historical" data generated by the group and its individuals about the future. And this latter data is derived from people's own articulated intentions.

In sum, inventing the future is a qualitatively different approach to traditional research and development futures education. It has four generic stages (with an almost infinite sub-set of variables within each):

1) context (both personal and global)
2) intentions (both personal and group or community or institutional)
3) inventions (social and individual)
4) strategies and plans (group and personal)

This is the broad curricular outline.

And the role of futures histories (or indeed a sense of history) in this outline is critical.

The curriculum may be used by teachers in classrooms or by facilitators in workshops. And its aim is to help people - average people - gain a sense of power and control over their destinies.

It is a simple approach to educational futures. But it has a multitude of variables and must be grounded in the philosophical presuppositions articulated in the first and second parts of this paper.

SUMMARY

Educational futurism is only one section of the broader field of futurism. But I believe that it is the most critical section. How people learn about the future will determine in large part how the future evolves. We can teach young people that the future is foretold by prophets and oracles - or by tea leaf readers - or by socio-econometric model builders- or any other of the hundreds of futurist approaches. We can even teach that the future is an unalterable course of spaceship earth hurtling into an unknown and uncharted time of brightness or darkness (depending upon our optimistic or pessimistic outlooks) in a fashion that would make neo-Calvinists cringe.

Or we can teach our students that the future is a frontier. It is a place. It is full of opportunities and open to all sorts of inventions and alternatives based on peoples hopes and dreams. If we do not do this; if our futures studies courses and curricula abound with the heavy baggage of the past; if we teach students that they must be in the future without a sense of power over that future, then our curricula in educational futures will be disastrous.

Time is our latest - and perhaps last - frontier. We can individually and collectively decide whether this frontier will be despoiled and left empty with bottles and bodies.

Or we can invent a future based on more positive individual intentions and a true sense of anticipatory democracy. What is described above is just one curricular

approach to this latter alternative. Others can themselves be invented.

Those who do not know the history of the future are condemned to live it.

FOOTNOTES

[1]It has been reported that Hopi Indian language has no verb tenses indicating past, present and future. Rather they indicate duration.

[2]R. Buckminster Fuller, "Time Present", Harpers Magazine (March, 1975), 73.

[3]See for example, Carl Hempel's "Covering Law Model"; and, W. Dray, Laws and Explanation in History. New York: Oxford University Press, 1960 as well as F. Stern, The Varieties of History. New York: World Publishing Co., 1956.

[4]See also Ulli Beier, The Origin of Life and Death: African Creation Myths. London: Heinemann Press, 1970.

[5]S. Freud, New Introductory Lectures on Psychoanalysis. New York: Norton Co., 1933 (1964); E. Erikson, Childhood and Society. New York: Norton Co., 1950 (1963); P. Richmond, An Introduction to Piaget. New York: Basic Books, 1970; J. Piaget, Main Trends in Inter-disciplinary Research. New York: Harper, 1970 (1973); J. Piaget, The Origins of Intelligence in Children. New York: Norton Co., 1952; L. Kohlberg, "A Cognitive-Developmental Approach to Moral Education" The Humanist (Nov., Dec., 1972), 13ff.

[6]Cf. L. Humphreys, "Open Classroom Teaching for Social Science Teachers" ERIC ED 114 332; and, "Concepts of Unified Education" ERIC ED 118 037.

[7]L. Humphreys, "Techniques of Unified Education" ERIC ED 118 043.

[8]W. Gordon, Synectics. New York: Macmillan Co., 1968.

[9]L. Humphreys, "Resources for Renewal: Interdisciplinarity" Chage in Liberal Education publication, 200 S. Esplanade, Leavenworth, Kan., 66048, 1978.

[10]J. Bruner, The Process of Education. New York: Vintage Books, 1963; L. Humphreys, "Philosophy of Unified Education" ERIC ED 118 042.

[11]"A Futures Creating Paradigm" Resource Center for Planned Change, American Association of State Colleges and Universities, Washington, D.C., 1978.

FOOTNOTES (cont.)

[12]F. Wuest, "A Public Learning Approach to Institutional Change" Change in Liberal Education Publication, 200 S. Esplanade, Leavenworth, Kan 66048, 1975; Warren Ziegler, "Education and the Future" McGill Journal of Education (Spring, 1977), 29ff; W. Ziegler and G. Healy, "The Planner as Teacher and Learner" Journal of Educational Planning (Jan., 1976), 53ff. W. Ziegler, "Planning as Action: Techniques of Inventive Planning Workshops" in Participatory Planning in Education Paris: O.E.C.D., 1974.

[13]Science fiction is particularly appropriate, and Dennis Livingston of Rensselaer Polytechnic Institute has developed a slide presentation around this approach.

[14]ACCESS is a community education futures project established by William Ewald in Santa Barbara, California. It employs a sophisticated computer system in an "operations room" to develop new mind sets for participants in workshops.